UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,017	06/28/2001	Yoshiaki Ikoma	Hitachi-0019	4983

7590 09/20/2004

KNOBLE & YOSHIDA LLC
Suite 1350
EIght Penn Center
1628 John F. Kennedy Blvd.
Philadelphia, PA 19103

EXAMINER	
CURS, NATHAN M	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 09/894,017	**Applicant(s)** IKOMA ET AL.	
	Examiner Nathan Curs	**Art Unit** 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 29 June 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 and 14-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3, 5-12 and 14-31 is/are rejected.

7)☒ Claim(s) 4,21 and 22 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 June 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 21 and 22 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 17 and 18. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 15 is rejected under 35 U.S.C. 112, first paragraph, because the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Regarding claim 15, the applicant discloses client side O/E and E/O converters that convert an electrical signal to or from a predetermined wavelength or a wavelength that may be selected from a variety of wavelengths, but the applicant does not disclose the claimed client side O/E and E/O (claimed second O/E and first E/O) that convert an electrical signal to and from an optical signal with different wavelengths.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 6 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "said test signal generator". There is insufficient antecedent basis for this limitation in the claim

Claim 32 recites the limitation "the selected optical signals". There is insufficient antecedent basis for this limitation in the claim. "Selecting at least part of the wavelengths" in claim 31 is not sufficient antecedent basis for "the selected optical signals".

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 5, 6, 10, 11, 14, 16-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al. (US Published Patent Application No. 10/38290) in view of Yoshida et al. (US Patent No. 6480308).

Regarding claim 1, Kikuchi et al. disclose an optical network system with quality control function characterized in that in an optical network system wherein a signal to be transmitted is converted to an optical signal of a prescribed wavelength and transmitted over an optical transmission path by a transmit-end wavelength converter (fig. 6 and paragraph 0008); and said optical signal from said optical transmission path is received and wavelength-converted by a receive-end wavelength converter, for regenerating the signal to be transmitted (fig. 7 and

paragraph 0010), the optical network system comprising: said transmit-end wavelength converter for a transmit end with a first transponder further comprising: an optical signal input unit for inputting an optical signal to be transmitted (paragraphs 0008 and 0009); and a receive-end wavelength converter at the receive end (paragraph 0010). Kikuchi et al. discloses channel quality control using channel overhead (fig. 18 and paragraphs 0121 and 0122), but does not disclose quality control using a test signal and Kikuchi et al. disclose that the client signal and system transponder overhead schemes must be compatible. Yoshida et al. disclose an optical transponder comprising a test signal generator circuit ultimately connected to an optical signal input unit for generating a test signal for testing optical transmission quality (fig. 2, fig. 3 and col. 8, lines 31-37), said test signal generator circuit further comprising a clock generator for generating a clock signal indicative of a bit rate to be added to the test signal (fig. 3, element 16, figs. 5a-e and col. 9, lines 1-5), where the test signal being a digital signal with a specific signal pattern at a specified signal rate inherently indicates a clock generator within the test pattern generator; an insertion circuit connected to said optical signal input unit and said test signal generator circuit for outputting an output signal by selectively inserting the test signal from said test signal generator circuit in the optical signal for the optical transmission quality in a transmission path formed between the transmit end and a receive end (fig. 2, element 1 and col. 7, lines 6-10); and a converter connected to said insertion circuit for converting the output signal of said insertion circuit to an optical wavelength (fig. 2, element 4 and col. 7, lines 1-5); and a receive-end wavelength converter at the receive end with a second transponder further comprising: an extraction circuit for selectively extracting the test signal in the optical signal from said transmission path and a test comparison circuit connected to said extraction circuit for determining the optical transmission quality based on the test signal extracted by said extraction circuit (fig. 2, element 9, fig. 3, elements 13, 15 and 16A and col. 7, lines 26-63 and col. 10, line

42 to col. 11, line 7), said test comparison circuit further comprising a clock extraction circuit for extracting the clock signal from the received test signal in order to synchronize with the bit rate of the selected test signal (fig. 3, elements 13, 15, 16A and col. 9, lines 27-42), where comparing the received digital signal with stored register values inherently requires extracting a clock from the received digital signal in order for a synchronized comparison between the incoming digital signal and the stored values to be possible. It would have been obvious to one of ordinary skill in the art at the time of the invention to insert the test signal function units taught by Yoshida et al. into the electrical signal portion of the original transponder of Kikuchi et al. as an switched test signal, in order to provide quality control without requiring extra bandwidth for channel overhead and without requiring that the client signal and system transponder overhead schemes be compatible.

Regarding claim 5, Kikuchi et al. disclose that if the quality of the transmission path is less than a predetermined transmission path quality level, another transmission path is established and quality is assessed for said another transmission path (figs. 19 and 20 and paragraphs 0123 to 0126). Kikuchi et al. disclose quality control based on channel overhead and do not disclose a switched test signal for use in assessing the quality of the path prior to establishing the transmission path. Yoshida et al. disclose a switch for initiating the test signal comparison for assessing the quality of a transmission path prior to establishing the transmission path (fig. 2, element 1 and col. 10, line 57 to col. 11, line 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the selector and test signal quality control taught by Yoshida et al. with the transponder of Kikuchi et al. for the reasons stated for claim 1 and to use the switched test signal, as taught by Yoshida et al., in order to determine the quality of the transmission path, and if necessary establish another transmission path, as taught by Kikuchi et al.

Regarding claim 6, Kikuchi et al. disclose an optical transponder in connection with a client line and an optical transmission line, comprising: a first optical to electronic (O/E) converter for converting an optical signal from the client line to an electronic signal (fig. 2, elements 113 and paragraph 0057); a first electronic to optical (E/0) converter for converting the electronic signal to an optical signal to be transmitted in the optical transmission line (fig. 2, element 114 and paragraph 0057); a second optical to electronic (O/E) converter for converting the optical signal from the optical transmission line an electronic signal (fig. 2, element 103 and paragraph 0056), wherein the transponder determines quality of transmission in the optical transmission line (fig. 18 and paragraphs 0121 and 0122); and a second electronic to optical (E/0) converter for converting the electronic signal to generate the optical signal to the client line (fig. 2, elements 104 and paragraph 0056). Kikuchi et al. disclose channel quality control using channel overhead, but do not disclose a test signal unit between the O/E and E/O converters for selecting a test signal to and from the electronic signal for quality control and Kikuchi et al. disclose that the client signal and system transponder overhead schemes must be compatible. Yoshida et al. disclose a transponder with an electrical signal testing units for quality control where the test signal is selected to generate a test-signal-contained electronic signal and then the electrical signal is converted to optical for transmission (fig. 2, elements 1 and 4 and col. 7, lines 1-10), and a test signal generator circuit further comprising a clock generator for generating a clock signal indicative of a bit rate to be added to the test signal (fig. 3, element 16, figs. 5a-e and col. 9, lines 1-5), where the test signal being a digital signal with a specific signal pattern at a specified signal rate inherently indicates a clock generator within the test pattern generator; and also disclose O/E conversion at the received side where the electrical output of the O/E is connected to said signal testing unit (fig. 2, elements 6, 7, 8 and 9 and col. 7, lines 11-38), said signal testing unit further comprising a clock extraction circuit for extracting the

clock signal from the received test signal in order to synchronize with the bit rate of the selected test signal (fig. 3, elements 13, 15, 16A and col. 9, lines 27-42), where comparing the received digital signal with stored register values inherently requires extracting a clock from the received digital signal in order for a synchronized comparison between the incoming digital signal and the stored values to be possible. It would have been obvious to one of ordinary skill in the art at the time of the invention to insert the test signal function units taught by Yoshida et al. into the electrical signal portion of the original transponder between the O/E and E/O converters of Kikuchi et al. to provide an switched test signal, in order to provide quality control without requiring extra bandwidth for channel overhead and without requiring that the client signal and system transponder overhead schemes be compatible.

Regarding claim 10, Kikuchi et al. in view of Yoshida et al. disclose the optical transponder according to claim 6 wherein said signal testing unit further includes a selection unit for selecting the electronic test signal (Yoshida et al.: fig. 2, element 1).

Regarding claim 11, Kikuchi et al. in view of Yoshida et al. disclose the optical transponder according to claim 6 wherein said signal testing unit further includes a signal comparison unit for comparing the electronic test signal to a known set of predetermined test signals (Yoshida et al.: fig. 2, element 8 and col. 7, lines 45-49).

Regarding claim 14, Kikuchi et al. in view of Yoshida et al. disclose the optical transponder according to claim 6 wherein said first O/E converter converts from the optical signal at a predetermined single wavelength and said second O/E converter converts from the optical signal at a plurality of wavelengths, said first E/O converter converting to the optical signal at the predetermined single wavelength and said second E/O converter converting to the optical signal at a plurality of wavelengths (Kikuchi et al.: fig. 2, elements 103, 104, 113, and 114 and paragraphs 0056 and 0057), where it would have been obvious to one of ordinary skill

in the art at the time of the invention that a converter converting to or from a plurality of wavelengths could convert to or from a predetermine single wavelength. In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art a prima facie case of obviousness exists.

Regarding claim 16, Kikuchi et al. disclose an optical signal network in connection with client lines and an optical network transmission line, a plurality of nodes (fig. 1, elements 141-1 and 141-2) each connected to a corresponding one of the client lines (fig. 1, elements 140-n and 150-n) and the optical network transmission line (fig. 1, element 144), the client lines each having an optical signal at a predetermined optical wavelength (fig. 1 and paragraph 0006), the optical network transmission line having an optical signal at a plurality of multiplexed wavelengths (fig. 1 and paragraph 0006), each of said nodes comprising: an optical wavelength separator connected to the optical network transmission line for separating the optical signal at a desired wavelength (fig. 1, element 146 and paragraph 0007); an optical wavelength combiner connected to the client lines and the optical network transmission line for combining the optical signals at the multiplexed wavelengths (fig. 1, element 145 and paragraph 0006); and a transponder connected to said optical wavelength separator and said optical wavelength combiner for converting the optical signal at a first wavelength to a second wavelength (paragraphs 0005 and 0006), said transponder further comprising a set of optical-to-electronic converters and electronic-to-optical converters (fig. 2 and paragraphs 0056 and 0057). Kikuchi et al. disclose channel quality control using channel overhead (fig. 18 and paragraphs 0121 and 0122), but do not disclose a transmission quality testing unit connected between said optical-to-electronic converter and said electronic-to-optical converter for testing a transmission quality of the optical network transmission line. Yoshida et al. disclose a transmission quality testing unit selectively connected after an optical-to-electronic converter and before an electronic-to-optical

converter for testing a transmission quality of the optical network transmission line (fig. 2, elements 1, 4, 6, 7, 8 and 9 and col. 7, lines 1-38), said quality testing unit further comprising: a test signal generator circuit for generating a test signal for testing optical network transmission line quality (fig. 2, fig. 3 and col. 8, lines 31-37); a clock generator connected to said test signal generator circuit for generating a clock signal indicative of a bit rate to be added to the test signal from said test signal generator circuit (fig. 3, element 16, figs. 5a-e and col. 9, lines 1-5), where the test signal being a digital signal with a specific signal pattern at a specified signal rate inherently indicates a clock generator within the test pattern generator; a test comparison circuit for determining the optical network transmission line quality based on the test signal received from other nodes (fig. 2, element 9, fig. 3, elements 13, 15 and 16A and col. 7, lines 26-63 and col. 10, line 42 to col. 11, line 7); and a clock extraction circuit for extracting the clock signal from the separated test signal in order to synchronize the bit rate of the separated test signal (fig. 3, elements 13, 15, 16A and col. 9, lines 27-42), where comparing the received digital signal with stored register values inherently requires extracting a clock from the received digital signal in order for a synchronized comparison between the incoming digital signal and the stored values to be possible. It would have been obvious to one of ordinary skill in the art at the time of the invention to insert the test signal function units taught by Yoshida et al. into the electrical signal portion of the original transponder between the O/E and E/O converters of Kikuchi et al. to provide an switched test signal, in order to provide quality control without requiring extra bandwidth for channel overhead and without requiring that the client signal and system transponder overhead schemes be compatible.

Regarding claim 17, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 wherein said optical wavelength separator is an optical demultiplexer (Kikuchi et al.: fig. 1, element 146 and paragraph 0007).

Regarding claim 18, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 wherein said optical wavelength combiner is an optical multiplexer (Kikuchi et al.: fig. 1, element 145 and paragraph 0006).

Regarding claim 19, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 further comprising an optical switch matrix located between said optical wavelength separator and said optical wavelength combiner (Kikuchi et al.: fig. 13, element 172).

Regarding claim 20, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 further comprising a monitor control unit connected to said transmission quality testing unit for monitoring and controlling said transmission quality testing unit (fig. 2, element 115 and col. 8, lines 14-29).

Regarding claim 21, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 wherein said optical wavelength separator is an optical demultiplexer (Kikuchi et al.: fig. 1, element 146 and paragraph 0007).

Regarding claim 22, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 wherein said optical wavelength combiner is an optical multiplexer (Kikuchi et al.: fig. 1, element 145 and paragraph 0006).

Regarding claim 23, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 wherein said optical wavelength separator is an optical wavelength add/drop module (Kikuchi et al.: fig. 13 and paragraphs 0099 to 0101).

Regarding claim 24, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 wherein said optical wavelength combiner is an optical wavelength add/drop module (Kikuchi et al.: fig. 13 and paragraphs 0099 to 0101).

Regarding claim 25, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 wherein a plurality of said transponders receives the optical signal from said optical wavelength separator at any combination of the desired wavelengths (Kikuchi et al.: fig. 13 and paragraphs 0099 to 0101).

Regarding claim 26, Kikuchi et al. in view of Yoshida et al. disclose the optical signal network according to claim 16 wherein a plurality of said transponders receives the optical signal from the client lines at any combination of the desired wavelengths to output to said optical wavelength combiner (Kikuchi et al.: fig. 8 and paragraph 0080 and fig. 9 and paragraph 0085).

Regarding claim 27, Kikuchi et al. disclose a method of assessing transmission quality in an optical network having optical transmission lines and client lines connected to the optical transmission lines, comprising: converting an optical signal at a first wavelength from one of the client lines to an electrical signal in a transponder (fig. 2, elements 113 and paragraph 0057); converting the electrical signal to the optical signal at a second wavelength in the transponder to be transmitted in the optical transmission lines (fig. 2, element 114 and paragraph 0057); converting the optical signal at the second wavelength from the optical transmission lines to the electrical signal in the transponder (fig. 2, element 103 and paragraph 0056); and converting the electrical signal to the optical signal at the first wavelength in the transponder to be outputted to the one of the client lines (fig. 2, element 104 and paragraph 0056). Kikuchi et al. do not disclose adding to the electrical signal a test signal in the transponder on the transmit side and determining transmission quality based upon the test signal in the transponder on the receive side. Yoshida et al. disclose a transmission quality testing unit selectively connected after an optical-to-electronic converter and before an electronic-to-optical converter for testing a transmission quality of the optical network transmission line (fig. 2, elements 1, 4, 6, 7, 8 and 9

and col. 7, lines 1-38), generating a test signal for testing optical transmission line quality (fig. 2, fig. 3 and col. 8, lines 31-37); specifying a bit rate of the test signal by adding a clock signal to the test signal (fig. 3, element 16, figs. 5a-e and col. 9, lines 1-5), where the test signal being a digital signal with a specific signal pattern at a specified signal rate inherently indicates a clock signal added to the test signal within the test pattern generator; extracting the clock signal from the test signal and synchronizing the bit rate of the test signal based upon the clock signal (fig. 3, elements 13, 15, 16A and col. 9, lines 27-42), where comparing the received digital signal with stored register values inherently requires extracting a clock from the received digital signal in order for a synchronized comparison between the incoming digital signal and the stored values to be possible. It would have been obvious to one of ordinary skill in the art at the time of the invention to insert the test signal function units taught by Yoshida et al. into the electrical signal portion of the original transponder between the O/E and E/O converters of Kikuchi et al. to provide an switched test signal, in order to provide quality control without requiring extra bandwidth for channel overhead and without requiring that the client signal and system transponder overhead schemes be compatible.

Regarding claim 28, Kikuchi et al. in view of Yoshida et al. disclose the method of testing transmission quality in an optical network according to claim 27 further comprising selecting the client lines based upon the transmission quality (Kikuchi et al.: fig. 8 and paragraphs 0080 and 0081).

Regarding claim 29, Kikuchi et al. in view of Yoshida et al. disclose the method of testing transmission quality in an optical network according to claim 27 further comprising selecting the optical transmission lines based upon the transmission quality (Kikuchi et al.: figs. 19 and 20 and paragraphs 0123 to 0126).

Regarding claim 30, Kikuchi et al. in view of Yoshida et al. disclose the method of testing transmission quality in an optical network according to claim 27 further comprising multiplexing the optical signal at a plurality of wavelengths, wherein said transmission quality is determined for each of the wavelengths of the optical signal (Kikuchi et al.: fig. 18 and paragraphs 0121 and 0122).

Regarding claim 31, Kikuchi et al. in view of Yoshida et al. disclose the method of testing transmission quality in an optical network according to claim 27 further comprising demultiplexing the optical signal received from the optical transmission lines to optical signals at a plurality of wavelengths including the first wavelength (Kikuchi et al.: fig. 1, element 146 and paragraph 0007); and selecting at least a part of the wavelengths that includes the first wavelength among the plurality of the demultiplexed optical signals in order to determine transmission quality, as described above for claim 27 regarding the combination of Kikuchi in view of Yoshida et al. and providing quality control for wavelength signals.

8. Claims 2, 3, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al. (US Published Patent Application No. 10/38290) in view of Yoshida et al. (US Patent No. 6480308) as applied to claims 1, 5, 6, 10, 11, 14, 16-18 and 23-30 above, and further in view of Stocker (US Patent No. 5235645).

Regarding claim 2, Kikuchi et al. in view of Yoshida et al. disclose the optical network system with quality control function according to claim 1, where the test signal is identified over the data signal by a pattern starting with a sequence of four 1 bits (col. 7, line 54 to col. 8, line 13) but do not disclose that said test signal generator circuit further comprises a pseudo-random signal generator circuit. Stocker discloses a data scrambler where a pseudo-random signal is generated in order to produce a pseudo-random signal where signal power fluctuations are

avoided by scrambling occurrences of continuous ones or zeroes (col. 1, lines 11-25 and lines 46-49) and where the first bits of the sequence are not scrambled so the frame can be identified (col. 4, lines 22-40). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the data scrambler of Stocker with the test pattern generator of Kikuchi et al., to create a pseudo-random test signal for the system of Kikuchi et al., where the first bits of the sequence identify the signal and the pseudo-random nature of the remaining signal prevents power fluctuations caused by continuous ones or zeroes.

Regarding claim 3, Kikuchi et al. in view of Yoshida et al. disclose the optical network system with quality control function according to claim 1, but do not disclose that said test signal generator circuit further comprising: an `all 1s and all 0s` generator circuit for generating `all 1s and all 0s` signals; and a scrambler circuit connected to said `all 1s and all 0s` generator circuit for scrambling the `all 1s and all 0s` signals to generate the scrambled test signal. Stocker discloses a data scrambler where a pseudo-random signal is generated in order to produce a pseudo-random signal where signal power fluctuations are avoided by scrambling a series of continuous ones or zeroes (col. 1, lines 11-25 and lines 46-49). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a simple 'all 1s and all 0s' generator circuit for the test pattern source of Kikuchi et al., based on the teaching of Stocker of converting a sequence of 1s and 0s to a random sequence, in order to provide a simple 1s and 0s generator source for test signal generation, followed by the data scrambler of Stocker (and descrambler of Stocker at the receive side) to create a pseudo-random test signal for the system of Kikuchi et al., where the pseudo-random nature of the signal prevents power fluctuations caused by continuous ones or zeroes.

Regarding claim 7, Kikuchi et al. in view of Yoshida et al. disclose the optical transponder according to claim 6 but do not disclose said signal testing unit further includes a

random signal generation unit for generating a random signal as the electronic test signal. Stocker discloses a electronic data scrambler where a pseudo-random signal is generated in order to produce a pseudo-random signal where signal power fluctuations are avoided by scrambling occurrences of continuous ones or zeroes (col. 1, lines 11-25 and lines 46-49). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the data scrambler of Stocker with the test pattern generator of Kikuchi et al., to create a pseudo-random test signal for the system of Kikuchi et al., where the pseudo-random nature of the signal prevents power fluctuations caused by continuous ones or zeroes.

Regarding claim 8, Kikuchi et al. in view of Yoshida et al. disclose the optical transponder according to claim 6 but do not disclose said signal testing unit further includes a predetermined signal generation unit for generating a predetermined sequence of 0 and 1 signals. Stocker discloses a data scrambler where a pseudo-random signal is generated in order to produce a pseudo-random signal where signal power fluctuations are avoided by scrambling a series of continuous ones or zeroes (col. 1, lines 11-25 and lines 46-49). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a simple 'all 1s and all 0s' generator circuit for the test pattern source of Kikuchi et al., based on the teaching of Stocker of converting a sequence of 1s and 0s to a random sequence, in order to provide a simple 1s and 0s generator source for test signal generation, followed by the data scrambler of Stocker, to create a pseudo-random test signal for the system of Kikuchi et al., where the pseudo-random nature of the signal prevents power fluctuations caused by continuous ones or zeroes.

Regarding claim 9, Kikuchi et al. in view of Yoshida et al. and further in view of Stocker disclose the optical transponder according to claim 8 wherein said signal testing unit further includes a clock unit for generating a clock signal (Stocker: fig. 1, element CLK and col. 2, lines

42-45) and a scrambling unit selectively connected to said clock units for scrambling the predetermined sequence of the 0 and 1 signals (Stocker: col. 2, lines 7-17). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a plurality of clock signals for the timing of the scrambler circuit in order to adapt to various transmission rates.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al. (US Published Patent Application No. 10/38290) in view of Yoshida et al. (US Patent No. 6480308) as applied to claims 1, 5, 6, 10, 11, 14, 16-18 and 23-30 above, and further in view of Varian (US Patent No. 5392289).

Regarding claim 12, Kikuchi et al. in view of Yoshida et al. disclose the optical transponder according to claim 6, where transmission quality is assessed based on receiving a test pattern correctly, but do not disclose that said signal testing unit further includes an error count unit for counting a number of errors or bit errors based upon the electronic test signal. Varian discloses a signal generating system for generating a signal, randomizing the signal, transmitting the signal, receiving the signal and determining the number of errors at the receiver (col. 2, lines 41-53 and col. 3, lines 42-59). It would have been obvious to one of ordinary skill in the art at the time of the invention to add the signal generator and signal receiver of Varian to the system of Kikuchi et al. in view of Yoshida et al. to generate the test pattern signal, and receive the transmitted test pattern signal, in order to provide a more detailed error rate indicator, since determining a specific error rate is not disclosed for the general error detection system of Yoshida et al.

Allowable Subject Matter

10. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

11. Applicant's arguments with respect to claims 1, 6, 16 and 27 have been considered but are moot in view of the new ground(s) of rejection.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

13. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

M.R. Sedighian

M. R. SEDIGHIAN
PRIMARY EXAMINER